

SEPTEMBER 01 1954

Acoustical Properties of Japanese Temple Bells FREE

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J. Acoust. Soc. Am. 26, 931 (1954)

<https://doi.org/10.1121/1.1927928>



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Program of the Forty-Seventh Meeting (Twenty-Fifth Anniversary Celebration) of the Acoustical Society of America

HOTEL STATLER, NEW YORK, NEW YORK, JUNE 23, 24, 25, AND 26, 1954

WEDNESDAY MORNING, JUNE 23, 10:00 A.M.

Commemorative Session A. Invited Papers

R. B. LINDSAY, *Chairman*

A1. Speech and Hearing. HALLOWELL DAVIS, *Director of Research, Central Institute for the Deaf, St. Louis, Missouri.*

A2. Absorption and Dispersion of Ultrasonic Waves in Liquids. S. PARTHASARATHY, *Head of Division of Acoustics, National Physical Laboratory of India.*

A3. The Relations between Acoustics and Hydrodynamics. E. G. RICHARDSON, *King's College, University of Durham, Newcastle upon Tyne, England.*

A4. Ultrasonics in the Field of Very Low Temperatures. A. VAN ITTERBECK, *University of Louvain, Belgium.*

A5. Electroacoustics. LEO L. BERANEK, *Bolt Beranek and Newman Inc., Cambridge 38, Massachusetts.*

WEDNESDAY AFTERNOON, JUNE 23, 2:00 P.M.

The Dayton C. Miller Session on Musical Acoustics

ARNOLD M. SMALL, *Chairman*

Invited Paper

B1. Twenty-Five Years of Musical Acoustics. (20 minutes). ROBERT W. YOUNG, *U. S. Navy Electronics Laboratory, San Diego 52, California.*—Two highlights of musical acoustics of the past twenty-five years are the advent of practical electrical musical instruments and research on deviations from the regular in music. Included in the latter are studies of the vibrato, transient modifications of tone quality, and departures of intonation from rigid scales. The "steady-state" concepts of the past now need refurbishing in the light of "deviation" evidence. An analysis of papers directly related to music and published in the first twenty-five volumes of the *Journal of the Acoustical Society* reveals a steadily increasing interest in musical acoustics until World War II. In common with other subjects the publication rate dropped sharply during the war. Publication in acoustics generally increased rapidly after the war, but interest in musical acoustics (at least as evidenced by papers in our Journal) did not revive. Patents on musical devices, however, now constitute a significantly larger percentage of the annual output of the U. S. Patent Office than was the case in 1941. Technology is outstripping research in musical acoustics; interest in research must be revived for the benefit of listeners to music in the next twenty-five years.

causes of these variations and their artistic effects are discussed.

B3. Acoustical Properties of Japanese Temple Bells. KOJI SATO, *Institute of Science and Technology, Tokyo University, Komaba, Meguro-ku, Tokyo,* AND YUTAKA KOHASHI, *Kobayashi Institute of Physical Research, 2431, Kokubunji, Tokyo.*—A Japanese temple bell is hung in an anechoic room and is forced to vibrate in a single one of its normal modes by means of a vibration pickup fed with a vacuum tube oscillator. The amplitude of vibration over the whole surface of the bell, the distribution of intensity of sound in its neighborhood and its rate of decay have been measured simultaneously. The experiments have been repeated with respect to different modes of vibration and different sizes of bells. As the result of those experiments, the relation between the vibration and the sound of Japanese bells has been found.

B4. Electronic Musical Instruments—Past, Present, and Future. R. H. TANNER, *Northern Electric Company Limited, Belleville, Ontario, Canada.*—The history of music is long, stretching back thousands of years into the past. The history of electronic musical instruments is short, spanning less than 50 years, but in that time notable accomplishments in artistry, ingenuity, and invention have been made. The future presents an intriguing field for surmise and speculation.

B2. Transient Tones of Wind Instruments. E. G. RICHARDSON, *King's College, University of Durham, Newcastle upon Tyne, England.*—Oscillograph records of the initiation of sound in organ pipes and orchestral wind instruments show large variations from one instrument to another. The

B5. Genesis of Absolute Pitch in the Audio Spectrum. ANDREW G. PIKLER, *U. S. Navy Electronics Laboratory, San Diego 52, California.*—Current theories of hearing silently imply universal absolute pitch. To evade the paradox, psychoacousticians prefer to deny the true difference be-

Contributed Papers